Viridis Advisors

Moving from Sustainability to Stewardship

March 13, 2014

**RE: Testimony Opposed to HB 5330, SB 443, SB 46**

My name is Kevin Dufour. I am an environmental scientist with over 25 years of experience. I became aware of this legislation while helping clients set and meet their sustainability benchmarks. I became concerned that this proposed legislation would take the Precautionary Principle too far and could fall prey to the "law of unintended consequences" and actually endanger the community and weaken sustainability efforts.

The professional sports turf managers, school grounds superintendents, and parks and recreation directors that I am fortunate to work with are dedicated and forward thinking individuals that go to great lengths to minimize environmental impact while maintaining the highest standards of safety and functionality of their properties. All of them believe in, advocate for, and utilize the Best Management Practices exhibited in their IPM or Plant Health Care approach. However, there are situations, beyond their control, where prompt and effective action is needed to preserve taxpayer property and protect children's health.

If you look at the risk of pesticide exposure you must reach one simple conclusion. The vast majority of children's exposure to pesticides does not come from landscaping sources. The policy position by the American Academy of Pediatrics points out that, "Parental, household and occupational exposures (maternal and paternal) appear to be the largest risks." [i] Very few of the scientific studies that the AAP used in its technical report even addressed the issue of landscaping chemicals. The technical report relied most on reports investigating household exposure, worker exposure, and food exposure. One of the few studies that looked at landscaping chemicals determined that 53% of a child's pesticide exposure was dietary. Even when a homeowner applied a lawn chemical at rates exceeding 3 times the label specified rate, the median exposure detected inside the home was 1.1% of the EPA reference dose. The median amount available for dermal penetration was 0.1%. If you use the World Health Organizations acceptable daily intake, the exposure from homeowner-applied treatment was 0.08%. "The data presented here suggest that children are not exposed at levels exceeding the IRIS RfD". The USEPA Integrated Risk Information Service (IRIS) Reference dose (RfD) is 100 micrograms per day for a 10 kg child. The measured exposure from a lawn

application by non-licensed, non-trained homeowners was 1.135 micrograms per day. [ii] There are numerous other studies that demonstrate that the risk of exposure from exposure to treated turf is minimal at best. ("A very limited amount of [pesticide] applied to turf is available for transfer and absorption during intensive human contact".[iii] "To date, HQs determined for azoxystrobin as well as the previously studied pesticides, [list omitted] have all been below 1.0, indicating safe exposure levels".[iv])

An enlightening study was published in The Journal of Environmental Science and Health which directly tested how little pesticide residue is transferred from sports fields to participants.

> *Total body dose of 2,4-D was determined in 10 volunteers following exposure to sprayed turf 1 hour following application and in 10 volunteers exposed 24 hours following application. Each group of 10 volunteers was divided in half and five wore long pants, a short-sleeved shirt, socks and closed footwear. The other five wore shorts and a short-sleeved shirt and were barefoot. All volunteers were exposed to a 2 by 15 m area of turf for 1 hour during which they alternated between walking and sitting or lying on the turf surface for intervals of 5 minutes. Dislodgeable residues of 2,4-D taken during the exposure sessions showed a rapid decline from 1 hour following application (8%) to 24 hours following application (1%). No detectable residues were found in 4-day urine samples supplied by volunteers except for 3 people who were barefoot and wearing shorts and contacted the turf 1 hour following 2,4-D application. The highest dose was measured in a volunteer who removed his shirt for 30 minutes of the exposure session (426 µg). Exposure levels of the other two volunteers who wore the prescribed clothing were lower (153 and 103 µg). No detectable residues were found in urine samples supplied by volunteers exposed to sprayed turf 24 hours following application.* ***These results indicate that at the doses measured, exposure to sprayed turf should present little risk in humans. However, people can reduce exposure to non- detectable levels by remaining off treated turf for a period of 24 hours or until after rainfall or irrigation so that dislodgeable residues and therefore potential exposure are essentially zero.*** *(Emphasis added)*[v]

This is just one of several studies that have objectively evaluated the exposure risk of pesticides on sports fields, golf courses, public parks and grounds. The science is available for review and based upon that review, supportable best practices can be developed. The bottom line, as stated in the previously cited paper presented by *The American Academy of Pediatrics,* based upon their research, the vast majority exposure of children to pesticides is dietary, a far smaller exposure is pesticide use in or around the home, a small fraction of exposure occurs via public outdoor exposure. This report strongly endorses the principles of IPM as a balanced risk reduction approach.

We know that there is a real and quantifiable risk to children's health when we do not manage athletic fields to the best of our ability. Once pests establish themselves, it has been proven that surface hardness increases to levels that exceed acceptable standards resulting in a significantly increased risk of traumatic brain injury. Similarly, it has been scientifically established that with the loss of turf and an increase in weed density, surface traction is reduced and this increases the chance of bone, joint, and ligament injury.[vi] 5.7% of high school football injuries were definitely related to field conditions and 15.2% were possibly related to field conditions. [vii] That's 20% of all injuries likely related to field conditions. In 2004 there were 186,000 youth football injuries and 116,000 youth baseball injuries.[viii] 10% of all lawsuits related to sports injuries claim that the athletic field was inadequately maintained. [ix]

The inclusion of an "emergency application" provision allowing for an application after approval in the face of an imminent threat to human health is not a protection. By the time an imminent threat is detected it is often too late. In the case of ticks, by the time you notice a tick on a child, chances are that it is too late. You have 24 hours to remove a tick before the spirochete is injected and the child is infected. The signs of infection may not become apparent for several weeks. Over this time period the damage done to the child is ongoing and many other children could be infected. How many parents truly and properly inspect their children for ticks? How many even know what a deer tick looks like. How small it is. (It is about as big as a period). A whole host of diseases can be transmitted by fleas, ticks, and other biting and stinging insects.

These are real and immediate threats, not theoretical ones. These are threats that can be dealt with preemptively based upon sound science. Also there is no exemption for economic harm or an economic emergency. We would never dream of building a multimillion dollar artificial turf field and then banning the chemicals needed to maintain it. While a proactive approach is better, it seems reasonable that if a field is in imminent danger of suffering a significant loss that the field could be closed and pesticides used to save or rehabilitate it. The natural turf fields represent a large investment of municipal funds. They have been cultivated and improved for years. That investment can be lost in a few days.

The problem with this idea of a total ban is that it is one-sided. It does not promote a balanced empirical approach. Every risk avoided trades against another risk that is promoted. The very small risk of using pesticides must be balanced against the harms that they ameliorate. In the case at hand we have very limited and thoroughly studied risk, that should only be used as a last resort, for which adequate protective measures exist, balanced against a very real and proven risk of childhood injury and disease, including a demonstrable risk traumatic brain injury, as well as other socioeconomic costs. "The empirical question is whether the health and environmental gains from the regulation of the substances involved are greater or lesser than the health or environmental costs of the regulation."[x] The idea that if reduction is good, a ban must be better is not so. We would be swapping a theoretical threat for a concrete risk and discarding a known benefit that reduces actual harm.

Establishing strong turf through cultural practices, then if that fails utilizing a natural approach, and finally if that fails using the least toxic, most environmentally sensitive treatment as a last resort is the Best Management Practice, it is IPM. Without an IMP based approach, turf density will be reduced. This will result the application of more chemicals to the fields in the form of fertilizers and organic approaches. These approaches, due to their reduced efficacy, require higher and more sustained inputs. The end result is more chemical exposure, not less, and more environmental degradation. All these problems come at higher financial costs in material, manpower, and mitigation efforts. All these issues are realistic, even realized, unintended consequences of an ill-advised ban.

IPM is the gold standard for harm reduction related to pesticides. It is adopted world wide and in a variety of venues from buildings to homes, to hospitals, to schools. The USGBC LEED green rating system awards credits for schools that have adopted comprehensive IPM Programs. The EPA promotes IPM. The American Academy of Pediatricians Promote IPM. The Sustainable Sites certification (SITES) supports an IPM approach. Reasonable organizations that wish to minimize or even eliminate pesticide exposure, yet retain the benefits that pest elimination affords human kind, endorse an IPM based approach.

All chemicals, organic or synthetic, are worthy of our caution and respect. IPM plans need to be critically evaluated. All applicable education, training, and certification should be mandated. All reasonable precautions should be required and enforced. There should be oversight over, and rock solid justification for, chemical operations. But, tools that may be the only effective and responsible option should not be summarily dismissed. Responsible facilities managers should be required to manage their schools in the healthiest, most environmentally sound, cost effective, and results oriented manner possible.

These types of bans impact those communities that can least afford them. Those children would be more likely to face unsafe play areas, closed fields or parks, and infested schools. We need a balanced, a reasoned approach, an approach that will minimize harm from all fronts. We need public policy that is developed in a careful and reasoned manner that takes into account the state of the art, one where the science is critically evaluated and best practices developed rather than a knee jerk reaction to well intentioned, yet ultimately exaggerated, concerns. We need to make use of the experts that have studied this subject and consider their opinion before setting policy.

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[i] http://www.pediatrics.org/cgi/doi/10.1542/peds.2012-2758.
[ii] http://ehpnet1.niehs.nih.gov/docs/2001/109p1185-1191nishioka/abstract.html
[iii] Bernatd CE et al, Arch Environ Contam Toxicol, 2001 Aug;41(2):237-40
[iv] http://www.nertf.org/25Final.pdf
[v] Human exposure to 2,4-d following controlled activities on recently sprayed turf, Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes, Volume 27, Issue 1, 1992
[vi] See study, Dr. J. Sorochan Univeristy of Tennesee Center for Athletic Field Safety. Excerpts available at www.turfnetsports.com/page/webinar_archives.html
[vii] See Harper et al, 1984

[viii] See AAP, US CPSC, & national Youth Sports Sagfety Foundation
[ix] Dougherty, 1988-Cockerham, S. T., V. A. Gibeault, and R. A. Khan. "Alteration of sports field characteristics using management." *International Turfgrass Society Research Journal* 7 (1993): 182-191.
[x] Aaron Wildavsky, But Is It True? (Cambridge, MA: Harvard University Press, 1995), 428.